Space Weather Forecast

Issued on Sunday, 28 May 2023 at 01:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: R1/R2 radio blackouts likely.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low with the highest flare a Common-class flare from a developing and magnetically complex region in the northwest quadrant. A further magnetically complex region towards the south-centre disc appears to have simplified slightly, with a previously active region in the northwest also simplifying. The remaining regions are all relatively simple and stable with only slow evolutions.

A CME (coronal mass ejection) observed leaving the south of the Sun on coronagraph imagery late on 26 May has been assessed as possibly glancing the Earth on 30 or 31 May, but with low confidence.

Solar Wind / Geomagnetic Activity: Solar winds have declined from elevated to slightly elevated levels as the Earth started to exit a coronal hole fast wind. Total magnetic field strength was weak, with the north-south component also varying weakly. Geomagnetic activity was Quiet throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be mainly Low to Moderate, with the main risk of flare activity from the large region in the southeast and increasingly from the delta region in the northwest. There is a slight chance of Strong class flares.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 25 May could glance the Earth on 29 May. A further feature which left the Sun on 26 May could glance Earth on 30 or 31 May. The current fast wind is expected to wane towards background on 28 May with the fast wind from coronal hole 07 then connecting either on 28 or 29 May. Geomagnetic activity is expected to be mainly Quiet, but with a risk of Active or G1/Minor Storms on both 29 and 30 or 31 May due to potential CME impacts.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels with solar radiation storms unlikely to occur. However, there is a slight chance of reaching the S1/Minor Storm threshold should any larger flares occur, mainly from the large region in the south.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	10	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	60	60	60	60
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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